

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A computer-implemented method for decomposing images in a sequence of images representing a scene, the method comprising:

transforming images in a sequence of images into a log opponent color domain;
applying a plurality of filters to the transformed images to generate a plurality of sequences of filtered images, the plurality of filters including a derivative filter to be applied to produce a derivative in a first direction and a derivative filter to be applied to produce a derivative in a second direction, where the first and second directions are different directions;
calculating a median image for each of the plurality of sequences of filtered images; and
using the median images to produce a reflectance image for the sequence of images, the reflectance image representing an image the application to which the plurality of filters would yield substantially the calculated median images for the sequences of filtered images.

2. (Previously Presented) The method of claim 1, further comprising:

calculating a sequence of illumination images corresponding to the images in the sequence of images, each image in the sequence of images represented as a product of the reflectance image and an illumination image of the sequence of illumination images.

3. (Original) The method of claim 2, further comprising:

modifying one or more of the reflectance image or the illumination images; and
combining the reflectance image and the illumination images, including the one or more modified images, to create a new sequence of images.

4. (Original) The method of claim 2, further comprising:
modifying one or more of the reflectance image or the illumination images; and
using the reflectance and illumination images, including the modified image or images, to
generate a new image.

5. (Previously Presented) The method of claim 1, wherein:
applying the plurality of filters includes applying each of the plurality of filters to each of
a luminance and chrominance channels of the opponent color space for each pixel in each image
in the sequence of images.

6. (Currently Amended) The method of claim 1, wherein:
~~calculating producing~~ a reflectance image includes ~~calculating producing~~ a reflectance
image having a minimum least squared error between the result of application of each of the
plurality of filters to the reflectance image and the calculated median image for the
corresponding sequence of filtered images.

7. (Original) The method of claim 1, wherein:
applying a plurality of filters includes applying three or more filters to the transformed
images.

8. (Original) The method of claim 7, wherein:
the plurality of filters includes one or more derivative filters in addition to the derivative
filter to be applied to produce a derivative in the first direction and the derivative filter to be
applied to produce a derivative in the second direction, the additional derivative filters being
applied to produce a derivative in one or more directions other than the first and second
directions.

9. (Original) The method of claim 7, wherein:
the plurality of filters includes filters operable to produce a derivative at a plurality of
different frequencies.

10. (Original) The method of claim 1, further comprising:
aligning the images prior to transforming the images.

11. (Original) The method of claim 1, further comprising:
aligning the filtered images prior to calculating the median image.

12- 20. (Canceled).

21. (Previously Presented) A computer program product embodied on a computer readable medium for decomposing images in a sequence of images representing a scene, the computer program product comprising instructions operable to cause a computer system to:

transform images in a sequence of images into a log opponent color domain;

apply a plurality of filters to the transformed images in the sequence of images, the plurality of filters including a derivative filter to be applied to produce a derivative in a first direction and a derivative filter to be applied to produce a derivative in a second direction, where the first and second directions are different directions;

calculate a plurality of median images, one for each sequence of filtered images; and

produce a reflectance image for the sequence of images, the reflectance image representing an image the application to which the plurality of filters would yield substantially the calculated median image for the sequence of filtered images.

22. (Previously Presented) The computer program product of claim 21, further comprising instructions operable to cause a computer system to:

calculate a sequence of illumination images corresponding to the images in the sequence of images, each image in the sequence of images represented as a product of the reflectance image and an illumination image of the sequence of illumination images.

23. (Original) The computer program product of claim 22, further comprising instructions operable to cause a computer system to:

modify one or more of the reflectance image or the illumination images; and
combine the reflectance image and the illumination images, including the one or more
modified images, to create a new sequence of images.

24. (Original) The computer program product of claim 22, further comprising
instructions operable to cause a computer system to:

modify one or more of the reflectance image or the illumination images; and
use the reflectance and illumination images, including the modified image or images, to
generate a new image.

25. (Previously Presented) The computer program product of claim 21, wherein:
the instructions operable to cause a computer system to apply the plurality of filters
include instructions operable to cause a computer system to apply each of the plurality of filters
to each of a luminance and chrominance channels of the opponent color space for each pixel in
each image in the sequence of images.

26. (Currently Amended) The computer program product of claim 21, wherein:
the instructions operable to cause a computer system to produce ~~calculate~~ a reflectance
image include instructions operable to cause a computer system to produce ~~calculate~~ a
reflectance image having a minimum least squared error between the result of application of the
plurality of filters to the reflectance image and the calculated median image for the sequence of
images.

27. (Original) The computer program product of claim 21, wherein:
the instructions operable to cause a computer system to apply a plurality of filters include
instructions operable to cause a computer system to apply three or more filters to the images in
the sequence of images.

28. (Original) The computer program product of claim 27, wherein:
the three or more filters include one or more derivative filters in addition to the derivative filters applied to produce a derivative in the first and second directions, the additional derivative filters being applied to produce a derivative in one or more directions other than the first and second directions.

29. (Original) The computer program product of claim 27, wherein:
the three or more filters include one or more filters operable to produce a derivative at a plurality of different frequencies.

30. (Original) The computer program product of claim 21, further comprising instructions operable to cause a computer system to:
align the images prior to transforming the images into the log opponent color domain.

31. (Original) The computer program product of claim 21, further comprising instructions operable to cause a computer system to:
align the filtered images prior to calculating the median image.

32-40. (Canceled).

41. (Previously Presented) A method for extracting the constant reflectance component from a sequence of images of a natural scene comprising:
capturing a sequence of images of a scene;
aligning each of the images of the sequence of images;
transforming each of the images in the sequence of images into a log opponent color domain;
applying a plurality of filters to the images in the sequence of images, the plurality of filters including a derivative filter to be applied to produce a derivative in a first direction, a derivative filter to be applied to produce a derivative in a second direction, where the first and second directions are different directions, and one or more additional filters;

calculating a median image for each sequence of filtered images; and
producing a reflectance image for the Original sequence of images, the reflectance image
having a minimum least squared error between the result of application of each of the plurality of
filters to the reflectance image and the calculated median image for the corresponding sequence
of filtered images.

42. (Canceled).

43. (Canceled).

44. (New) A system for decomposing images in a sequence of images representing a
scene, the system comprising:

a computer system comprising:

a processor for executing instructions;

a computer-readable memory for storing executable instructions; and

an image processing program, stored on the computer-readable memory and
including instructions operable to cause the processor to:

transform images in a sequence of images into a log opponent color
domain;

apply a plurality of filters to the transformed images in the sequence of
images, the plurality of filters including a derivative filter to be applied to produce a derivative in
a first direction and a derivative filter to be applied to produce a derivative in a second direction,
where the first and second directions are different directions;

calculate a plurality of median images, one for each sequence of filtered
images; and

produce a reflectance image for the sequence of images, the reflectance
image representing an image the application to which the plurality of filters would yield
substantially the calculated median image for the sequence of filtered images.

45. (New) The system of claim 44, wherein the image processing program further includes instructions operable to cause the processor to:

calculate a sequence of illumination images corresponding to the images in the sequence of images, each image in the sequence of images represented as a product of the reflectance image and an illumination image of the sequence of illumination images.

46. (New) The system of claim 45, wherein the image processing program further includes instructions operable to cause the processor to:

modify one or more of the reflectance image or the illumination images; and

combine the reflectance image and the illumination images, including the one or more modified images, to create a new sequence of images.

47. (New) The system of claim 45, wherein the image processing program further includes instructions operable to cause the processor to:

modify one or more of the reflectance image or the illumination images; and

use the reflectance and illumination images, including the modified image or images, to generate a new image.

48. (New) The system of claim 44, wherein:

the instructions operable to cause the processor to apply the plurality of filters include instructions operable to cause the processor to apply each of the plurality of filters to each of a luminance and chrominance channels of the opponent color space for each pixel in each image in the sequence of images.

49. (New) The system of claim 44, wherein:

the instructions operable to cause the processor computer system to produce a reflectance image include instructions operable to cause the processor to produce a reflectance image having a minimum least squared error between the result of application of the plurality of filters to the reflectance image and the calculated median image for the sequence of images.

50. (New) The system of claim 44, wherein:
the instructions operable to cause the processor to apply a plurality of filters include
instructions operable to cause the processor to apply three or more filters to the images in the
sequence of images.

51. (New) The system of claim 50, wherein:
the three or more filters include one or more derivative filters in addition to the derivative
filters applied to produce a derivative in the first and second directions, the additional derivative
filters being applied to produce a derivative in one or more directions other than the first and
second directions.

52. (New) The system of claim 50, wherein:
the three or more filters include one or more filters operable to produce a derivative at a
plurality of different frequencies.

53. (New) The system of claim 44, wherein the image processing program further
includes instructions operable to cause the processor to:
align the images prior to transforming the images into the log opponent color domain.

54. (New) The system of claim 44, wherein the image processing program further
includes instructions operable to cause the processor to:
align the filtered images prior to calculating the median image.